

## REMARKS

By this amendment, claim 1 is revised, and arguments are made to place this application in condition for allowance. Currently, claims 1-4 and 6-9 are before the Examiner for consideration on their merits and claims 10-17 are withdrawn from consideration.

Applicant traverses the rejection of the claims on the grounds that the Examiner has not established a *prima facie* case of obviousness in light of the revisions to claim 1 and the submission of the expert Declaration attached herewith.

In review, claims 1-9 stand rejected under 35 U.S.C. § 103(a) based on the combination of United States Patent No. 6,375,014 to Garcera et al. (Garcera) when taken with United States Patent No. 7,247,370 to Childs et al. (Childs) and either United States Patent No. 6,499,606 to Grangeon or United States Patent No. 5,505,841 to Pirbazari et al. (Pirbazari).

The rejection can be summarized as follows.

1) Garcera teaches a macroporous support that has an impregnated portion of the support, which has lower porosity than the remaining part of the support.

2) It is admitted that Garcera lacks a separator layer on the inside surface of the support.

3) It is admitted that Garcera does not teach an impregnation extending from the inner surface of the support.

4) Childs is relied upon to teach that a pore filling gel can be used on either side of the membrane.

5) Garcera and Childs are combinable because they are in the same field of endeavor, namely pore filling of porous membrane supports.

6) The Examiner concludes that "it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the partial pore filled membrane structure of Garcera et al. by making it such that the partial pore filling occurs from the inside of the membrane to the outside as taught by Childs et al. for the purpose of decreasing the amount of fouling experienced by the membrane during operation."

7) Grangeon or Pirbazari teach the presence of a separator layer.

8) The Examiner concludes that it would be obvious to use the separator layer of Grangeon or Pirbazari in the support of Garcera. As with Childs, the Examiner contends that Garcera and Grangeon are in the same field of endeavor and are properly combined.

Applicant submits that the Examiner has committed error in concluding that Garcera and Childs are combinable because they relate to pore filling of porous membrane supports. In fact, the technologies of Garcera and Childs are entirely different and are not combinable because of their fundamental differences.

In the rejection, the Examiner insists that Garcera and Childs are properly combinable since they are both in the same field of endeavor, i.e., pore filling of membrane supports. Applicant submits that this characterization of a commonality between Childs and Garcera to justify the modification of Garcera is inaccurate and not

supported by a reasoned and factual interpretation of the teachings of these two references.

In fact, one of skill in the art would not draw the same conclusion that the Examiner has done. This position is supported by the submission of the attached Declaration from an expert in the field. The Declarant is not only an expert in the field but one of the inventors in the secondary reference to Grangeon et al. cited to support the rejection.

The Declaration makes the following points:

- 1) The problem of the prior art is discussed in terms of the heterogeneous separation along the channels to due a variance of permeate flow across the membrane.
- 2) Solutions to this problem have been proposed in the prior art cited in paragraphs [0009, 0010] of Applicant's published application.
- 3) The Garcera solution to this problem by creating a permeability gradient along the length of the membrane so that the flow rate of the permeate is constant. The porosity gradient created by Garcera functions as a pressure brake to alter the permeate flow to the desired aim.
- 4) The function of Childs in terms of the pore filling is explained as being entirely different than the pore filling of Garcera. At least three fundamental differences between Childs and Garcera are recited on page 4 of the Declaration.

- 5) Because of these fundamental differences, the expert opinion of the Declarant states that Childs and Garcera are entirely different in their aims and that one of skill in the art would NOT modify Garcera in the manner suggested in the Office Action.
- 6) The Declarant further states that even if Garcera were to be modified using the teachings of Childs, the modification would be a substitution of the filtration technique used in Garcera for the cross-linked gel pore-filled region of Childs; not merely a change in the configuration of the impregnated layer of Childs as is alleged in the rejection.
- 7) Finally, the Declaration explains that the secondary references to Grangeon and Pirbazari are completely different from Childs so that it is improper for the Examiner to use Childs, which employs a pore-filled impregnation with a cross-linked gel for filtration, on one hand to modify Garcera, and the secondary references, which use a separation layer deposited on a support to achieve filtration.

Turning back to the rejection again, the purpose of the Declaration is to demonstrate that while Childs and Garcera have a basic commonality in that each have pores that are filled, a further inspection into their teachings from an expert in the field reveals that these two patents are fundamentally different from each other. The fundamental differences identified in the Declaration must be considered by the Examiner when assessing obviousness and the correctness of modifying Garcera in the manner alleged in the rejection.

Put another way, the Declaration is expert rebuttal evidence demonstrating that the Examiner has oversimplified the teachings of Childs and Garcera in order to have a reason to take a particular configuration of the pore-filled impregnation of Childs and use it in Garcera. The Declaration evidence demonstrates that the reasoning used to formulate the rejection does not have a proper factual basis and this means that the articulated reasoning required by the Supreme Court in *KSR* is missing and the rejection must be withdrawn.

Applicant also argues that the requirement that the pore filling in claim 1 is obtained with inorganic particles is further substantiation that the rejection is not well grounded. Why look to the teachings of Childs that deals with pore filling with cross-linked gel when the invention requires inorganic particles for pore filling? As explained in the Declaration, the filtration purpose of the gel in Childs is completely different from the inorganic particles that function as a pressure brake in Garcera. Consequently, one of skill in the art would not look to Childs to modify the pore density alteration using inorganic particle as taught in Garcera. This is another reason why the rejection is improper and should be withdrawn.

Another difference weighing in favor of the patentability of claim 1 is that Childs is concerned with flat membranes and Garcera is concerned with tubular membranes. In Childs, there is no teaching of a modification closed to the internal surface of each channel as there is no channel in the membranes to speak of. In Garcera, there is no concern with a modification of the support for each channel. Garcera only makes a single modification to the support for all of the channels.

It is also important to view Figure 1 of Childs. Here, the difference between the pore-filled and thin film membrane is shown. Childs is the pore filled membrane whereas Garcera is a thin film membrane as the separating layer is deposited on the support. In Childs, the support is modified, whereas in Garcera, the modification relates to the creation of the denser outer layer. With these divergent approaches, why apply the teachings of Childs with respect to an organic gel in an organic membrane to a support that utilizes inorganic particles to alter the porosity of the outer layer of the support as is done in Garcera? The teaching of Childs is a clear rebuttal of the Examiner's allegation that Garcera and Childs are similar to each other to support the rejection. What the Examiner is doing is ignoring this clear teaching away from Childs and engaging in the hindsight reconstruction of the prior art in light of Applicant's own disclosure.

Turning now to the presence of the inner separator layer and reliance on either Grangeon or Pirbazari, neither of these two references makes up for the deficiency in the rejection based on Garcera and Childs. Thus, even if these references were properly combined with Garcera, a *prima facie* case of obviousness would still not exist and the rejection would have to be withdrawn.

To recap, the rejection is improper for the simple reason that the Examiner has erred in equating the teaching of Childs and Garcera in order to modify Garcera and include the feature of the invention regarding the position of the pore filling. The rejection is also improper on the grounds that Childs teaches away from the reliance on Grangeon and Pirbazari to modify Garcera and include a separator layer. Even if

Grangeon and Pirbazari were combined with Garcera, the limitation regarding the partial pore filling extending from the inner surface of the support is still missing since Childs is not properly combinable with Garcera.

In light of the above, the Examiner is respectfully requested to examine this application and pass all pending claims onto issuance.

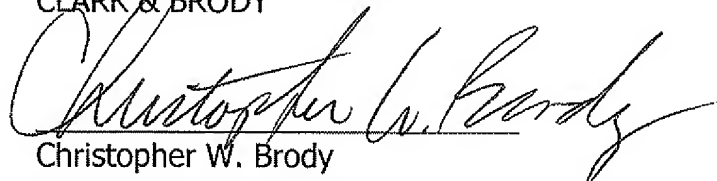
If the Examiner believes that an interview would be helpful in expediting the allowance of this application, the Examiner is requested to telephone the undersigned at 202-835-1753.

The above constitutes a complete response to all issues raised in the Office Action dated June 5, 2009.

Again, reconsideration and allowance of this application is respectfully requested.

Applicant petitions for a three month extension of time. Please charge Deposit Account No. 50-1088 the fee of \$555.00. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 50-1088.

Respectfully submitted,  
CLARK & BRODY



Christopher W. Brody  
Registration No. 33,613

**Customer No. 22902**  
1090 Vermont Ave., N.W., Suite 250  
Washington, D.C. 20005  
Telephone: 202-835-1111  
Facsimile: 202-835-1755  
Date: December 4, 2009